

### ABSTRACT OF THE INVENTION

A system and method for measuring a voltage differential in a current-carrying pipe using a propulsion vehicle. The system may be adapted for use with a pipeline pig or other propulsion device, which is configured to determine the electric current in a pipeline with nominal noise while the apparatus is moving. One aspect of the present invention is a pig which is outfitted with electrical contacts. These electrical contacts may optionally consist of rotating steel brushes and/or rotating steel knives. The pig includes data logging capabilities which may record location and voltage data. A pig according to the present invention optionally may include electromechanical devices which reduce electrical noise.